



United States Environmental Protection Agency  
Office of Enforcement and Compliance Assurance  
Office of Criminal Enforcement, Forensics and Training

**National Enforcement Investigations Center**

NEICVP0973P01

**PROJECT PLAN**  
**Resource Conservation and Recovery Act Investigation**

Western Zirconium Inc.  
Ogden, Utah  
NEIC Project No.: VP0973

November 2011

Richard Ross, Project Manager/Principal Analytical Chemist  
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Linda TeKrony, Team Member

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## CONTENTS

ACCEPTANCE AND SIGN-OFF .....	3
DISTRIBUTION LIST .....	4
INTRODUCTION .....	5
BACKGROUND .....	5
GOAL OF WORK .....	6
PROJECT/TASK DESCRIPTION .....	7
FIELD MEASUREMENTS.....	8
DATA QUALITY/QUALITY CONTROL REQUIREMENTS.....	9
INSTRUMENT/EQUIPMENT TESTING/MAINTENANCE/CALIBRATION .....	9
EVIDENCE MANAGEMENT.....	10
CORE TEAM ROSTER .....	11
DOCUMENTS AND RECORDS/DELIVERABLES.....	12
PROJECT TIMELINE.....	12
ASSUMPTIONS AND CONSTRAINTS.....	13
DATA MANAGEMENT/QUALITY MANAGEMENT.....	14
HEALTH AND SAFETY .....	15
COMMUNICATIONS PLAN .....	16

## ATTACHMENTS

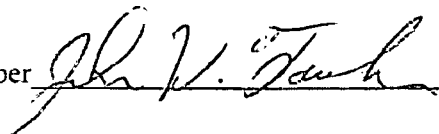
- A NEIC Health and Safety Plan

## ACCEPTANCE AND SIGN-OFF

This project plan has been reviewed and constitutes the minimum inspection requirements for personnel engaged in field activities at this project site. However, the project manager, or designee, has the authority to change these requirements, on the basis of conditions present at the site. Any changes will be explained and documented in the field logbook.

### PREPARED BY:

John Fowler, Team Member

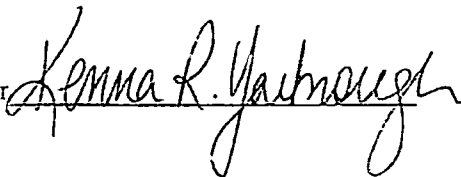


Date 11/23/2011

### REVIEWED BY:

Field Branch

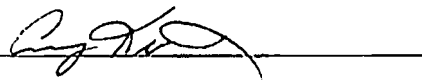
Quality Assurance Manager



Date 11/3/2011

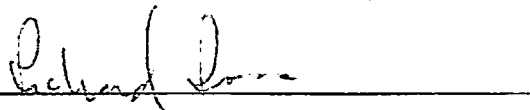
### APPROVED BY:

Field Branch Chief:



Date 11-3-11

Project Manager:



Date 11/3/11

## INTRODUCTION

### BACKGROUND

U.S. Environmental Protection Agency (EPA) Region 8 requested EPA's National Enforcement Investigations Center (NEIC) to collect samples of magnesium chloride salts generated at the Western Zirconium Inc. facility located at 10,000 W 900 S, Ogden, Utah, for testing at the NEIC laboratory. NEIC is to determine if the magnesium chloride salts have any of the determinant properties of hazardous materials under the Resource Conservation and Recovery Act (RCRA) listed in 40 CFR 261.21 or 261.23. According to information on the company's website, Western Zirconium is a division of Westinghouse Electric Company, LLC, which produces zirconium metal and metal products. Magnesium chloride is generated during the zirconium refining process when magnesium metal is used to reduce zirconium tetrachloride to zirconium metal in a heated crucible. Utah Department of Environmental Quality (UDEQ) and EPA Region 8 personnel may accompany the NEIC field team.

The following is an image of the facility from Google Earth:



## GOAL OF WORK

The goal of NEIC's field involvement in this investigation is to collect samples of three magnesium chloride materials at Western Zirconium which have been identified by EPA Region 8. The three magnesium chloride materials are: (1) magnesium chloride from a mold formed when the crucible cools (A-grade Magnesium Chloride), (2) magnesium chloride contaminated with impurities which is broken from the crucible and liner by the company and collected in piles (Western Zirconium designates this as B-grade magnesium chloride), and (3) A grade magnesium chloride after it is size reduced to minus ¾ inch by Western Zirconium for shipment offsite. The samples will be driven to the NEIC laboratory in Denver, Colorado, for analysis. Field splits of the samples will be turned over to Western Zirconium before the NEIC field team leaves the facility.

Field monitoring for flammable and toxic gases will be conducted by the NEIC field team while samples are collected. Any heat generation by the magnesium chloride material will be documented with photographs using an infrared camera. Some of the material may also be filmed with the infrared camera to record any heat generation as it is misted with water (mist test). All material to be sampled will also be screened for radiation.

All activities of NEIC personnel will be performed in accordance with the NEIC quality system.

## PROJECT/TASK DESCRIPTION

The NEIC field team will accomplish the objectives through the following activities:

- Perform sampling of the A-grade salt from the magnesium chloride block from the pieces on the floor after it is broken up to 4 inch pieces by the facility (location 1). The company has agreed to break up the salt to the desired size particles. A flat-bottom shovel with sides that will accommodate the largest chunk in the pile (as size reduced, approximately "softball" size) will be used to perform the "alternate shoveling" technique. Two piles containing approximately 10 gallons of material and a third larger material pile will be formed. The two 10-gallon piles will then be split using the "alternative shoveling" technique to form a 5-gallon NEIC sample and a 5-gallon company split sample. Each NEIC and company split sample will be placed in double plastic bags and the bags sealed with cable ties. The NEIC will place their samples inside 5-gallon plastic buckets for transport.
- Perform sampling of the B-grade salt, also known as sponge, after it is broken into 2 inch pieces by the facility (location 2). The material will be mixed in place on the floor prior to sampling. Alternate-shoveled scoops using a 6-inch-wide flat-bottom shovel will then be used to create two piles; one for NEIC and one for the company. NEIC and company split samples will be placed in double plastic bags and the bags sealed with cable ties. The NEIC will place their sample inside 5 gallon plastic buckets for transport.
- Perform sampling of the -3/4 inch crushed A-grade salt (location 3). Sampling method and location will be based on such factors as safety, weather and feasibility. Western Zirconium may obtain a 1 cubic yard sample of the 3/4 inch material from the bottom of the silo or from the conveyor belt to the silo while NEIC personnel are present. This would then be taken to the salt processing area where it will be dumped onto a plastic sheet on the floor and undergo alternate shoveling to create four bags of approximately 5 gallons each. Two of the bags will be selected by the facility as company split samples and the remaining two bags will be the NEIC samples. Each NEIC and company split sample will be placed in double plastic bags. The NEIC samples will be placed inside 5 gallon plastic buckets for shipment.
- Cautiously apply a water mist<sup>1</sup> to a piece or pieces of the material and document if heat generation occurs using an infrared camera if time permits. This test will be performed on material which that is not placed into the sample bags. The wetted portions of the material will be left at the facility.

The onsite visit is scheduled for November 8, 2011, and will include the following activities:

- Meet with Western Zirconium personnel to make introductions and discuss any safety issues. The facility has already been asked for plant records on the process which

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<sup>1</sup> Using a small hand sprayer

creates the magnesium chloride salt. Determine current plant operations and discuss aid from the company for sample collection.

- J. Fowler or L. TeKrony will conduct air and radiation monitoring before entering areas where sampling will occur.
- Samples will be collected as that outlined above by J. Fowler or under his direction. Documentation of the sample collection will be conducted by L. TeKrony or R. Ross.
- J. Fowler will apply water mist to each of the materials as described above (time permitting) while R. Ross photographs the reaction with an infrared camera.
- Prepare sample tags, chain-of-custody, and receipt for sample documentation for the samples and document transfer of the company splits to Western Zirconium.
- Meet with Western Zirconium personnel for a close out meeting to get requested company records and conclude the visit.

Upon completion of the onsite sampling, NEIC personnel will drive the samples to the NEIC laboratory in Denver, Colorado, for analysis. When the laboratory analyses are completed, a draft NEIC report containing field activities and laboratory analyses will be prepared and provided to EPA Region 8 personnel for review and comment. The final NEIC report will be completed upon receipt and incorporation of the Regional comments.

## FIELD MEASUREMENTS

More specific details regarding field team safety are included in the attached NEIC Health and Safety Plan (**Attachment A**).

The First Check+ multi-gas detector will be used to screen for the presence of hydrogen gas (lower explosive limit [LEL]) and hydrogen sulfide that may be emitted from the material. A separate ToxiRAE chlorine gas monitor will also be available if needed. The Ludlum radiation survey meter will be used to determine the level of radiation above background of the materials sampled. If radiation above 1 mrem/hr is detected, an EPA radiation expert in Las Vegas (see HASP) will be contacted for guidance. All air and radiation monitoring will be conducted by J. Fowler or L. TeKrony. Normal photographs will be taken with a Pentax Optio W60 camera by R. Ross or L. TeKrony. All applicable procedures will be followed when using instruments for field screening purposes.

If time permits, portions of each material that are sampled will be subjected to water mist. An approximately 500-gram portion of the salt, not collected as a sample, will be photographed with a FLIR SC640 infrared camera as distilled water is cautiously sprayed on the material with a small hand sprayer. L. TeKrony or R. Ross team will monitor the material for heat generation

using a FLIR SC640 infrared camera. J. Fowler will setup the infrared camera and apply the water.

## DATA QUALITY/QUALITY CONTROL REQUIREMENTS

All environmental sampling and field measurements will be documented in the field logbooks and follow appropriate NEIC procedures and as outlined in this document. Field screening will be performed for health and safety purposes. All field activities and analytical measurements will be reviewed per NEIC procedures.

A separate laboratory quality assurance project plan (QAPP) will be prepared by R. Ross once the samples are at the NEIC laboratory in Denver. This QAPP will contain details of the laboratory analyses which will be performed on the samples

## INSTRUMENT/EQUIPMENT TESTING/MAINTENANCE/CALIBRATION

Instruments will be calibrated in accordance with applicable standard operating procedures (SOPs), instrument manuals, and sound field practices. Calibrations will be documented, and all necessary information will be provided. The Ludlum radiation meter, First Check+ multi-gas detector, and ToxiRAE chlorine-gas detector have been verified for calibration and configured for operation by Marc Gustafson at the NEIC. A field bump test verification of the FirstCheck+ will be conducted onsite. Accurate operation of the infrared camera will be verified by measuring the internal temperature of one of the laboratory ovens at a known temperature and of ice at 32 degrees Fahrenheit before and after use in the field. The NEIC inspection team will follow appropriate quality assurance/quality control (QA/QC) and standard procedures for screening, according to relevant NEIC operating procedures:

Procedure Name	Procedure Number
<i>Evidence Management Procedure</i>	NEICPROC/00-059R3
<i>Quality Management Plan</i>	NEICPLAN/01-001R4
<i>FirstCheck + Multi-Gas Detector</i>	NEICPROC/10-001
<i>NEIC Field Safety and Health</i>	NEICPROC/00-034R1
<i>Field Quality Control Samples</i>	NEICPROC/99-010R1
<i>Detection of Radiation Using a Ludlum Model 3 or 14C Survey Meter</i>	NEICPROC/00-058R1
<i>ToxiRAE II PGM-1100</i>	NEICPROC/11-004
<i>Soil Sampling</i>	NEICPROC/00-051R1
<i>Standard Practice for Sampling Material Streams on Conveyors</i>	ASTM D 7204-07
<i>Project Acceptance</i>	NEICPROC/10-003
<i>Project Delivery</i>	NEICPROC/10-004
<i>Equipment Inventory, Maintenance, Calibration and Verification</i>	NEICPROC/00-18R4



## EVIDENCE MANAGEMENT

The NEIC operating procedure *Evidence Management*, NEICPROC/00-059R3, including chain-of-custody and document control procedures, and the *NEIC Quality Management Plan*, NEICPLAN/01-001R4, will be followed during this investigation. Any documents and records obtained from the facility will be uniquely numbered and listed on a document log. A photograph log will be maintained of all photographs taken during the inspection. Digital copies of the photographs and copy of the photograph log, with a receipt for documents, will be offered to the facility before completion of the onsite inspection. Any documents declared to be confidential business information (CBI), pursuant to 40 Code of Federal Regulations (CFR) Part 2, will be so noted on the log and secured appropriately. Company splits will be provided to the facility, as requested. Receipt-for-samples and documentation for the company split samples will be prepared onsite and left with the facility.

CORE TEAM ROSTER

Role	Responsibilities	Name
Project manager/ Principal Analytical Chemist	<ul style="list-style-type: none"> <li>Serve as focal point for project communications</li> <li>Prepare the laboratory and regulatory conclusions section of the NEIC report and coordinate all other report writing tasks</li> <li>Manage and monitor day-to-day project activities and provide direction to team members and supporting organizations</li> <li>Manage and monitor quality targets and goals</li> <li>Conduct lessons learned session and develop recommendations for continuous improvement</li> <li>Provide preliminary findings to EPA Region 8</li> <li>Coordinate development of draft and final reports with team members</li> <li>Guide reports through review process</li> <li>Organize all project data and associated project documents in project file</li> <li>Serve as primary contact for follow-up</li> <li>Coordinate, make assignments to other chemists, and conduct analysis at the NEIC laboratory</li> </ul>	Richard Ross
Project team member	<ul style="list-style-type: none"> <li>Prepare field project plan and health and safety plan (HASP)</li> <li>Obtain customer approval and acceptance of the project plan, including deliverables</li> <li>Pack equipment and supplies</li> <li>Conduct safety monitoring and collect samples as described in this document</li> <li>Transport equipment and supplies to the site by government vehicle</li> <li>Direct safety monitoring and sampling onsite</li> <li>Collect samples in accordance with this project plan and procedures</li> <li>Prepare background, introduction, and field activity section of the final report</li> <li>Transport equipment, supplies, and samples to the NEIC by government vehicle</li> </ul>	John Fowler
Project team member	<ul style="list-style-type: none"> <li>Photograph and document collection of samples as required</li> <li>Serve as a point of contact with the region, state, and facility</li> <li>Conduct safety monitoring as described in this document</li> <li>Prepare photo logs of any infrared or normal photographs taken onsite</li> </ul>	Linda TeKrony
NEIC Health and Safety Officer	<ul style="list-style-type: none"> <li>Review HASP</li> <li>Consult and advise team in response to changed conditions or emergency safety incident</li> </ul>	Jamie Headley
OCEFT SHEMP manager	<ul style="list-style-type: none"> <li>Review and approve HASP</li> <li>Consult and advise team in response to changed conditions or emergency safety incident</li> </ul>	Deborah Nelson
Quality assurance	<ul style="list-style-type: none"> <li>Review and approve final project plan, and final reports</li> <li>Assist team with verifying conformance with NEIC quality management system</li> </ul>	Kenna Yarbrough
Project administrative support	<ul style="list-style-type: none"> <li>Provide the field team with administrative support (including assistance with shipping, travel, schedule changes, report printing, etc).</li> </ul>	Gloria Coleman
Project editorial support	<ul style="list-style-type: none"> <li>Review and provide editorial comments on the project</li> </ul>	Dianne Clark

Role	Responsibilities	Name
	plan, draft reports, and final report.	

## DOCUMENTS AND RECORDS/DELIVERABLES

NEIC anticipates the following customer deliverables for this effort:

Deliverable	Description	Recipient(s)
1. Project plan	Final plan will be delivered via e-mail	See Distribution List on page 4
2. Preliminary findings call	E-mail written draft of preliminary findings and conference call	David Duster, EPA Region 8
3. Draft inspection report	Draft inspection summary and findings	NEIC reviewers TBD, David Duster, EPA Region 8
4. Final inspection report	Final inspection summary and findings	David Duster, EPA Region 8

## PROJECT TIMELINE

Major Phases, Milestones and Tasks	Who	Target Work/Completion Dates							
PRE-FIELD PLANNING									
NEIC kickoff meeting	Project manager	11/01/11							
Prepare field project plan	J. Fowler	10/31/11 TO 11/03/11							
Final project plan	J. Fowler	11/03/11							
FIELD OPERATIONS									
Team arrives in Ogden	Project team				11/07/11				
Onsite activities	Project team				11/08/11				
Team departs	Project team				11/09/11				
POST-FIELD OPERATIONS									
Preliminary findings	Project manager				No preliminary findings are possible until completion of the laboratory analyses by 02/17/2011				
Lessons learned/team feedback meeting	Project team				By 12/01/11				
Project team members submit draft report table sections or appendices for report to project manager	Project team				By 01/01/12				
Circulation of internal draft project report	Project manager				02/29/2012 to 05/31/2012				

**ENFORCEMENT CONFIDENTIAL -- FOIA EXEMPT -- DO NOT RELEASE**

Major Phases, Milestones and Tasks	Who	Target Work/Completion Dates							
Circulation of external draft project report to Reg. 8	Project manager				05/29/2012				
Regional review/comment	Region 8				05/31/2012 to 06/15/2012				
Final project report preparation	Project manager				06/15/2012 to 06/29/2012				
Final project report submittal to customer					07/02/2012				
<b>FOLLOWUP</b>									
Customer feedback	Project manager /Program coord.								07/20/2012
Project/Phase Completion Report (w/ QA manager and supervisor feedback)	Project manager /Branch manager								07/27/2012
Organize and review of records and project file	Project manager and field team								07/27/12
Litigation/negotiation support	Project team								TBD

**ASSUMPTIONS AND CONSTRAINTS**

Assumption	Impact to Project's Budget, Timeline, or Staffing Needs if Assumption is Not Met
1. NEIC team will be given access to the facility's responsible officials and process areas.	<ul style="list-style-type: none"> <li>The onsite inspection timeframe may be extended.</li> <li>Report may be delayed.</li> </ul>
2. Field activities will be completed in 1 day.	<ul style="list-style-type: none"> <li>More time in the field may result in a delay of report and other project related deadlines and deliverables.</li> </ul>
3. Weather will permit safe driving to and from the site in Ogden, Utah from the NEIC in Denver, Colorado.	<ul style="list-style-type: none"> <li>The onsite inspection timeframe may be changed.</li> </ul>
4. All NEIC team members will be able to complete quality work in a timely manner according to the project timeline.	<ul style="list-style-type: none"> <li>Report and other project related deadlines and deliverables may be delayed.</li> </ul>
5. Customer will provide feedback within agreed upon deadlines.	<ul style="list-style-type: none"> <li>Report and other project related deadlines and deliverables may be delayed.</li> </ul>
6. NEIC personnel will be able to perform the site activities with necessary government funding.	<ul style="list-style-type: none"> <li>The onsite inspection may be rescheduled or cancelled.</li> <li>Report may be delayed.</li> </ul>

## DATA MANAGEMENT/QUALITY MANAGEMENT

Output	Quality Criteria	Quality Assurance Method(s)	Evidence of Compliance	Quality Responsibilities
Project plan	Coverage of critical topics	Diverse review and comments	Comments received and incorporated	<ul style="list-style-type: none"> <li>J. Fowler , Team member</li> </ul>
Project field work assessments	Measurement objectives and tasks as described in this project plan	Assessment	Documentation of meeting and review of results (date included in this project plan)	<ul style="list-style-type: none"> <li>Project team</li> <li>Management</li> <li>QA Manager</li> </ul>
Draft and final reports	Clear and technically accurate	Review of draft report by select reviewers prior to submittal to Region. Regional review and transmittal of comments	Agreement by author(s) and reviewers. Acceptance by Region	Reviewers: <ul style="list-style-type: none"> <li>Project manager</li> <li>Project team</li> <li>Branch management</li> <li>David Parker</li> <li>Dianne Clark</li> <li>Other peer, team, regulatory, legal, and quality reviewers to be determined</li> <li>EPA Region 8</li> </ul>

## HEALTH AND SAFETY

Safety procedures will comply with all appropriate facility safety practices, the attached NEIC Health and Safety Plan [Attachment A], and applicable EPA and NEIC safety procedures. The NEIC safety procedures which will be followed are those documented in the NEIC operating procedure *Field Safety and Health*, NEICPROC/00-034R1, and applicable provisions of *EPA Safety, Health, and Environmental Management Guidelines* (2004 edition), NIOSH/OSHA/USCG/EPA *Occupational Safety and Health Guidance Manual for Hazardous Material Site Activities* (1985 edition), and *EPA Standard Operating Safety Guides* (1992 edition).

## COMMUNICATIONS PLAN

Target Audience	Communications Needs	Responsible
NEIC management	<ul style="list-style-type: none"> <li>Project status report via TaskMaster.</li> <li>Change requests: submit verbally with written confirmation.</li> </ul>	Project manager
Customers	<ul style="list-style-type: none"> <li>Overall project coordination and scheduling of tasks and deliverables, investigation findings, and change requests as needed.</li> <li>Draft/final reports delivery and schedules.</li> </ul>	Project manager
Customers	<ul style="list-style-type: none"> <li>Project plan and draft/final reports delivery and schedules.</li> </ul>	J. Fowler, Team member
Project team	<ul style="list-style-type: none"> <li>Team meetings post-field operations at a frequency necessary to meet project objectives and agreed upon deadlines and deliverables. Include review of scope and schedule status, upcoming tasks, management of change and risk, and obstacles to success.</li> </ul>	Project manager
Project team	<ul style="list-style-type: none"> <li>Health and safety concerns: provide verbal description ASAP.</li> <li>Changes (actual or needed) that have a significant impact on the project scope, schedule, or resource needs: provide verbal description ASAP.</li> <li>Newly identified risks: provide verbal description ASAP.</li> </ul>	Project team
NEIC Health and Safety Officer and SHEMP	<ul style="list-style-type: none"> <li>Health and safety incidents: provide description ASAP, verbally or via email.</li> </ul>	Project team/manager
OCEFT SHEMP manager	<ul style="list-style-type: none"> <li>Health and safety incidents: provide description ASAP, verbally or via email.</li> </ul>	Project team/manager
Field Branch Quality Assurance Manager	<ul style="list-style-type: none"> <li>Field sampling challenges/concerns and data quality or usability issues that arise.</li> </ul>	Project manager

## DISTRIBUTION LIST

Each of the following individuals has been provided with a copy of this project plan:

David Duster, EPA Region 8, program contact	Richard Ross, NEIC, project manager and principal analytical chemist
Gloria Coleman, NEIC, administrative support	Kenna Yarbrough, NEIC, Quality Assurance Manager, Field Branch
Deborah Nelson, OCEFT SHEMA	Jamie Headley, NEIC, Health and Safety Officer
John Fowler, NEIC, project team member	Linda TeKrony, NEIC, project team member
David Parker, NEIC, Civil Program Coordinator	Craig Kubik, NEIC, Chief Field Branch
Dianne Clark, NEIC, technical editor	Brad Venner, statistician
Diane Sipe, NEIC, Chief Laboratory Branch	Suzy Schulman, NEIC Chief, Civil Services Section, Field Branch
Amy Bern, Laboratory Section Chief	